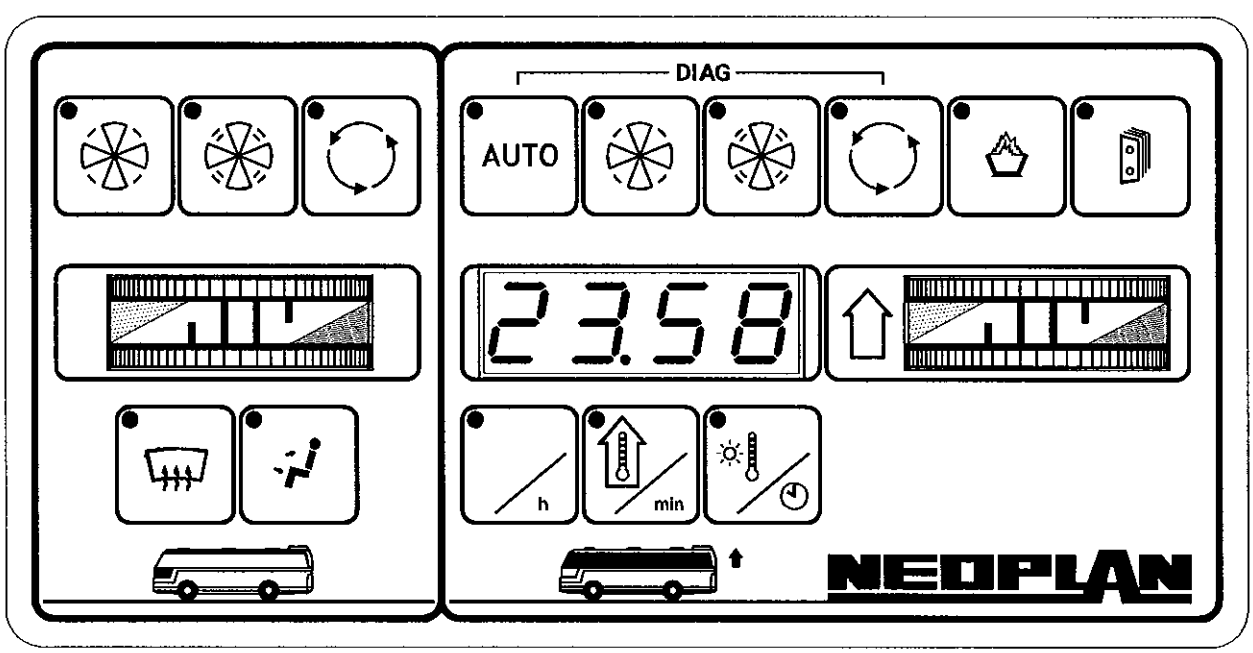
OPERATING INSTRUCTIONS

in the

NEOPLAN - JETLINER

NEOPLAN - CITYLINER

NEOPLAN - SPACELINER



☞ CAUTION!

IMPORTANT INFORMATION FOR THE USER:

Unplug the air-conditioner centre before carrying out welding work on the vehicle.

Errors and faults which have not actually occurred in the vehicle may be indicated if you attempt to start the engine with a flat vehicle battery.

All internal memories of the computer are reset by briefly interrupting the air-conditioner centre's power supply (wait approx. 30 sec.) or by pressing the "RESET" keys.
(Then please wait for the air-conditioner centre to conduct its self-test approx. 3 min.)

Please make a habit of switching off the air-conditioner control and ventilation on the air conditioner centre before switching off the vehicle engine! (- this will prolong the service life of the relays!)

DIGITAL AIR-CONDITIONER CONTROLLER KR-450/C

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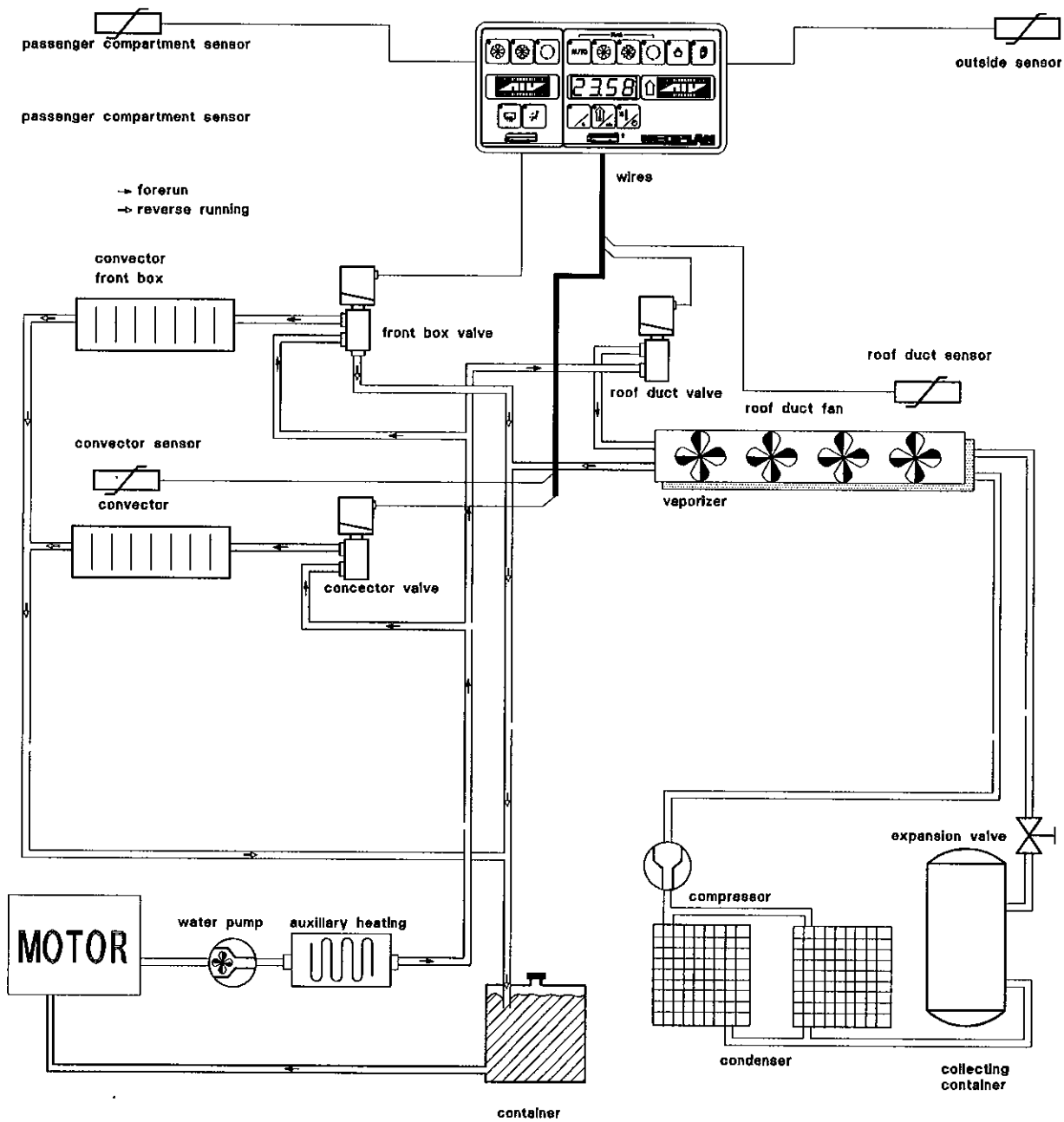
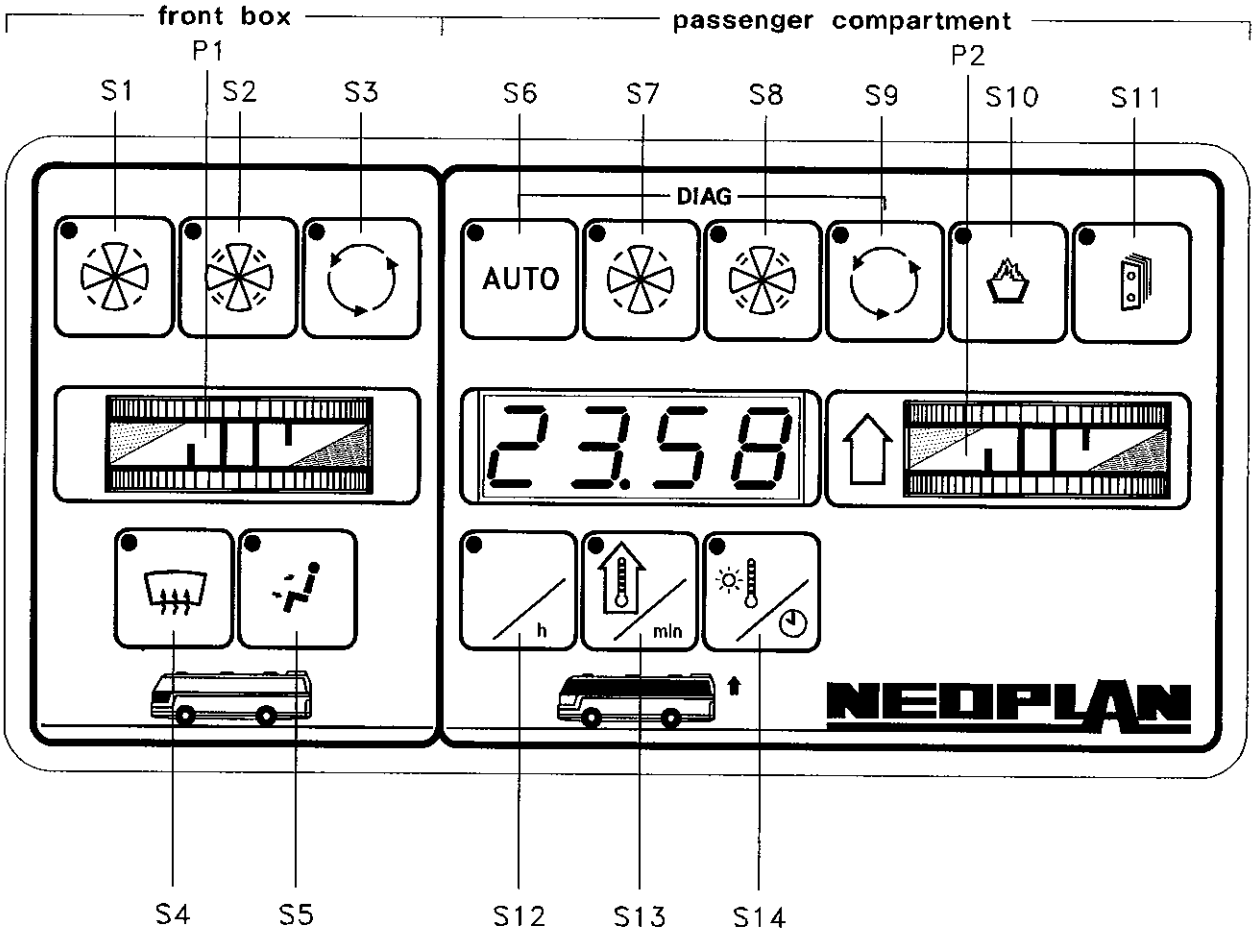
1. INTRODUCTION

The KR-450 air-conditioner controller is a compact control and regulation unit incorporating microprocessor technology for use in single-decker or multi-decker coaches.
Clear and simple operation means that the coach driver can keep his eyes on the road and does not have to bother with adjusting the temperature and ventilation controls for the passenger compartment.
Using microprocessor technology for vehicle control now means that, for the first time, it is possible to use a temperature controller for more than just its actual regulation and control tasks as an element for checking and monitoring the vehicle to be controlled. This means that all signalling devices and control elements connected to the controller are monitored and checked wherever possible. In addition, the incorporated "intelligence" makes possible operator prompting which largely eliminates the possibility of system operating errors and informs the operator of any faults and malfunctions which may occur.
Since all switching and control elements are combined in one plug-in unit, this makes it possible even for persons not specially trained to eliminate a defect simply by exchanging the entire unit.

2. BLOCK DIAGRAM OF THE CONTROL SYSTEM IN A SINGLE-DECKER COACH



3. KEY ASSIGNMENT ON THE FRONT PANEL



Key assignment, temperature, driver's cockpit (Front box)

Poti P1:	Setpoint control for valve position at the driver's cockpit (front box)
Key S1:	Front box fan, stage I
Key S2:	Front box fan, stage II
Key S3:	Flap, fresh air/circulating air
Key S4:	Flap, screen defrost
Key S5:	Flap, driver's cockpit/centre aisle
Keys S4 + S5:	Lamp test with ignition switched off

Key assignment, air-conditioner control system, passenger compartment

Poti P2: Setpoint control for passenger compartment temperature

Key S6: -Automatic mode with ignition switched on
-Diagnostic mode with ignition switched off with S9

Key S7: Ventilation mode, stage I

Key S8: Ventilation mode, stage II

Key S9: -Flap, fresh air/circulating air with ignition switched on with S6

Key S10: Auxiliary heating system

Key S11: Convectors on/off

Key S12: -Setting time or time switch (h) with "ignition off"
-Increment test mode
-Upper deck passenger compartment temperature with "ignition on" on double-deckers

Key S13: -Setting time or time switch (min) with "ignition off"
-Decrement test mode
-Lower deck passenger compartment temperature with "ignition on"

Key S14: -Activating time setting mode and time switch for auxiliary heating system with "ignition off"
-Confirm key for new time entered
-Outside temperature display

LED DISPLAY

The following information is shown on the LED display:

1) With the ignition switched off: Setting the time and time switch for the auxiliary heating system

Diagnosis

Dot display (blinks at tell-tale indicator for processor function)

2) With ignition switched on: Passenger compartment and outside temperature display with

frost warning

Time

Error message

If the driver requests information on the passenger compartment temperature, the current air-conditioning status is displayed at the far left in addition to display of the current temperature, with the following abbreviations
- C for cooling mode
- H for heating mode and
- L for ventilation mode.

4. QUICK-START OPERATING INSTRUCTIONS

These instructions provide you with general information on the individual functions of the KR-450 air-conditioner controller.

DISPLAY

The current time is always displayed as the basic display with the ignition switched on.
If the ignition is switched off, the decimal point between the minutes and hours display blinks as a tell-tale indication of the function of the microprocessor. The display is used to show the data for error detection in test mode.

AUTO

The normal mode of operation of the air-conditioner controller is Automatic mode. You must press key "Auto" (S6) with the engine running to activate this mode. You can now set the required passenger compartment temperature for the upper deck and lower deck with the setpoint potentiometers P2 and P3 at the right.
You can set a temperature between 18 and 28 °C.

VENTILATION

The roof duct fans can be switched on manually with keys S7 and S8. This closes the motor valves for the roof duct heaters and ventilates at 70 % or 100 % of the fan capacity.

CONVECTORS

The convectors are switched on automatically and control their temperature as preset on the setpoint potentiometers in Automatic mode. The value sensed by the convector sensor serves as the actual value, and the passenger compartment temperature sensor limits heating of the passenger compartment.
The convectors can also be switched on during Ventilation mode and are controlled as in Automatic mode.

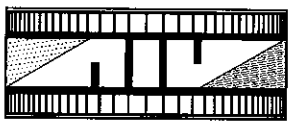
FRONT BOX

The air-conditioner controller includes a front box control system accommodated in the left-hand part of the unit. You enter the temperature with the setpoint potentiometer (P1). Various keys permit you to operate the flaps and the 2-stage fan.

5. DESCRIPTION OF FUNCTION

5.1 OPERATION, DRIVER'S COCKPIT (FRONT BOX)

Potentiometer P1: **Setting the setpoint for the temperature of the driver's cockpit.**



The water valve is opened or closed fully at the two extreme settings.

Key S1: **Front box fan 40 %**
Also functions without the engine running

Key S2: **Front box fan 100 %**
Functions only when the engine is running

Key S3: **Flap "Fresh air/circulating air", driver's cockpit**
Basic setting: Fresh air

Key S4: **Flap "Screen defrost"**
When you press the key, the air stream from the front box fan is aimed directly onto the windscreen.

Key S5: **Flap "Driver's cockpit/centre aisle"**
The flap opens when you press the key. In this setting, a part of the air stream is directed towards the driver and into the centre aisle.

NOTE:
The front box fan draws in the air either from the passenger department or from the outside, dependent upon the setting of the "Fresh air/circulating air" flap. The inducted air is routed via the heat exchanger in the front box and then

-towards the windscreen and the driver's cockpit
-only towards the windscreen (flap "Driver's cockpit/centre aisle" closed, flap "Screen defrost" open)
-only towards the driver's cockpit (flap "Driver's cockpit/centre aisle" open, flap "Screen defrost" closed)
-or is shut off,

dependent upon the setting of flaps "Screen defrost" and "Driver's cockpit/centre aisle".

5.2 OPERATION OF AIR-CONDITIONER CONTROL SYSTEM, PASSENGER COMPARTMENT

Potentiometer P2: **Setpoint control for the upper deck passenger compartment temperature**

The setpoint control covers the temperature range of 18 °C to 28 °C. The passenger compartment temperature is approx. 22 °C in the centre setting range (white zone).

Key S6: **AUTOMATIC MODE**

The passenger compartment control system must be switched on by pressing key S6 after you switch on the ignition. Automatic control is possible only with the engine running. The fan and the air-conditioner are always switched off if you switch off the ignition. The motor valves and flaps remain in position. In this operating mode, the passenger compartment temperature is regulated to the temperatures set with the setpoint potentiometers automatically using the components of the system (fan, air-conditioner and heater).

As a special function, you can switch off automatic speed control of the roof duct fans with the ventilation keys (S7/S8). The fan speed is then permanently set to 40 % (stage I - S7) or 100 % (stage II - S8) as is the case in Ventilation mode.

Key S7: **VENTILATION MODE, stage I**

When you press keys S7, the motor valves of the roof duct heater close and the roof duct fans are switched on to stage I (approx. 40 %). This ventilation mode is possible even without the engine running and only with the ignition switched on. The incorporated undervoltage protection facility in the unit avoids exhaustive discharge of the vehicle battery.

Key S8: **VENTILATION MODE, stage II**

Function as with key S7, but ventilation capacity 100 %
This key operates only with the engine running (alternator).

NOTE:

The fans are increased slowly and in controlled manner to 100 % fan capacity in order to avoid a high making current! (this takes approx. 15 sec.!)

Key S9: **Flap "Fresh air/circulating air" passenger compartment**

You can use this key when on the move to switch the ventilation system to circulating air, and an automatic function switches back to fresh air after 10 min. At road speeds of less than 15 km/h, the circulating air flap is closed by a so-called speedo context in order to avoid the system drawing in exhaust gases.
In addition, the system switches over automatically to circulating air at temperatures above 28 °C and below -20°C.

Key S10: **AUXILIARY HEATING SYSTEM**

The auxiliary heating system is started up when you press this key. Operation of the auxiliary heating system is indicated by the LED in the key.

Key S11: **CONVECTORS**

This key can be used to switch the convectors on and off. They are also controlled via their own sensor in Ventilation mode, dependent upon the set temperature (setpoint potentiometer P2). The measured passenger compartment temperature is used as the basis for limiting the temperature for convector control.

6.1 ERROR MEMORY FUNCTION

If an error occurs when on the move and if this error is acknowledged, the error number is stored in the unit's error memory.

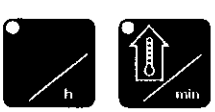
These errors are displayed again each time you switch on the ignition in order to indicate the defect to you. The contents of the error memory must be cleared manually when the error has been rectified.

6.2 CALLING AND CLEARING THE CONTENTS OF THE ERROR MEMORY

The contents of the error memory can be called by pressing keys S6 and S9 simultaneously with the ignition switched off.

You will first see the program version of the unit on the display (e.g. 2.08).

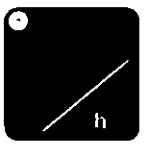
You will then see the number of errors detected, shown by an A and a consecutive number.



You can then "page" forwards and backwards in the error memory with keys S12 and S13.

You can clear the contents of the error memory by pressing both keys simultaneously.
You will then see "A 00" on the display.

If there is still an error in the system (e.g. sensor discontinuity), this error message will be displayed again immediately.



Key S12:

When setting the time and the time switch, this key is used to increment (count up) the hours display. In Diagnostic mode, this key is used to increment the diagnostic steps.

Key S13: **PASSENGER COMPARTMENT TEMPERATURE**

When setting the time and the time switch, this key is used to increment (count up) the minute display. In Diagnostic mode, this key is used to decrement (count down) the diagnostic steps.

Key S14: **OUTSIDE TEMPERATURE**

With ignition switched on:

-The outside temperature is displayed when you press the key.

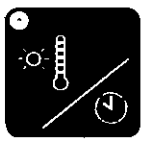
-The current time is displayed again 5 seconds after you press the function key.

With ignition switched off:

-Activating Clock-set mode

-Confirm key for new time entered.

5.3 SETTING THE TIME

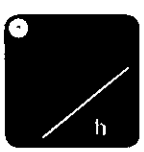


Key S14: **OUTSIDE TEMPERATURE/TIME**

PRECONDITION: Engine off, ignition off!

You can call Clock-set mode with key S14. Keys S12 and S13 light. The current system time is displayed on the display. If you do not press any other key, the display disappears after approx. 5 seconds and the previously set system time is retained.

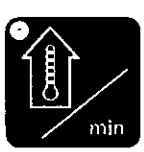
After you press key S14, you can then press



Key S12

to increment the hours display. If you keep the key pressed, the display counts up in 1/2 second steps.

You can set the minute display with



Key S13

and the same operating steps apply as for key S12:

After you set the hours and minutes display, you can confirm the new time entered with key S14. If you do not confirm within approx. 5 seconds, the unit retains the previously set system time.

5.4 PROGRAMMING THE AUXILIARY HEATING SYSTEM

The same operating steps as for setting the time apply to programming the time switch for the auxiliary heating system.

However, after you press key S14 (Setting mode), you must then, within approx. 5 sec. press

Key S10 (AUXILIARY HEATING SYSTEM)

Then, as when setting the time, you must program the required switch-on time for the auxiliary heating system and confirm this with key S14.

The programmed times are cancelled again when you switch on the ignition.

If the auxiliary heating system has been started automatically, it can be switched off again with key S10. Otherwise, the heating system switches off again automatically after 1 hour. The convectors are also switched on and the temperature is controlled together with the auxiliary heating system.

The temperature value of the setpoint controls is used as is the case with passenger compartment temperature control. Set the relevant setpoint potentiometer to "min" if you do not wish to pre-heat a deck.

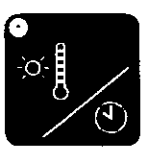
The current switch-on time can be checked with the Automatic key (S6) with the ignition off. If the auxiliary heating system has been programmed, you will see the switch-on time on the display. You will see display "OFF" if no times have been programmed.

This check display is cleared again after approx. 5 seconds.

6.0 FAULTS AND ERRORS - DIAGNOSIS

The KR-450 air-conditioner controller features a sophisticated error and fault diagnosis program.

This error and fault diagnosis program runs, as it were, "in the background" during normal air-conditioner operation and monitors the sensors, setpoint potentiometers and valve potentiometers and the switched outputs of the valve motors and other loads for discontinuity and short circuit. If one or more faults or errors occur when on the move, the time display is cleared and the relevant malfunction is displayed in the form of a consecutive number. An "E" for ERROR in front of the number signals the error.



The LED in key S14 blinks simultaneously.

You must then "acknowledge" the fault with this key. The air-conditioner centre then continues to operate in emergency mode, and the sensor values are simulated for instance, dependent upon the operating state. This emergency mode can be seen from a dot at the far right on the display. The time is displayed once again after you acknowledge the error.

If there is a valve potentiometer error, the air-conditioner controller attempts to operate the valves even without a check-back signal so as to permit it to regulate the system, even if not precisely.

If an output has a short circuit, this output is disconnected and the relevant error is shown on the display. The system attempts to reactivate the output each time you switch the ignition off and on.

6.4 LIST OF ERROR MESSAGES - CITYLINER

Error	3	Short circuit, outside sensor
Error	4	Discontinuity, -"-
Error	5	Short circuit, passenger compartment sensor
Error	6	Discontinuity, -"-
Error	7	Short circuit, duct sensor
Error	8	Discontinuity, -"-
Error	9	Short circuit, convector sensor, front
Error	10	Discontinuity, -"-
Error	11	Short circuit, convector sensor, rear
Error	12	Discontinuity, -"-
Error	27	Short circuit, setpoint potentiometer, passenger compartment temperature
Error	28	Discontinuity,
Error	31	Short circuit, setpoint potentiometer, driver's cockpit
Error	32	Discontinuity,

Error messages: Input/output errors

Error	33	No air-conditioner compressor check-back signal
Error	34	No auxiliary heating system (WEBASTO) check-back signal
Error	35	Prop valve, roof duct, potentiometer defective
Error	36	Prop valve, driver's cockpit, potentiometer defective
Error	37	Prop valve, convector, front, potentiometer defective
Error	38	Prop valve, rear, potentiometer defective

Error messages: Short circuits and voltage errors

Error	52	Prop valve, roof duct, intake, short circuit
Error	53	Prop valve, roof duct, outlet, short circuit
Error	54	Prop valve, convector, front, outlet, short circuit
Error	55	Prop valve, convector, front, intake, short circuit
Error	56	Prop valve, convector, rear, outlet, short circuit
Error	57	Convector, rear, intake, short circuit
Error	58	Driver, circulating air, intake, short circuit
Error	59	Driver, circulating air, outlet, short circuit
Error	60	Driver, defrost, intake, short circuit
Error	61	Driver, defrost, outlet, short circuit
Error	62	Driver/centre aisle, intake, short circuit
Error	63	Driver/centre aisle, outlet, short circuit
Error	64	Prop valve, driver's cockpit, intake, short circuit
Error	65	Prop valve, driver's cockpit, outlet, short circuit
Error	69	Roof duct fan, short circuit
Error	70	Air-conditioner compressor control, short circuit
Error	71	Compressor, 50/100 % switch, short circuit
Error	73	Auxiliary heating system control, short circuit
Error	74	Water pump control, short circuit
Error	75	Frost warning control, short circuit
Error	80	No valve potentiometer voltage
Error	81	Outputs, valve motors or servo motors, front box, overloaded
Error	82	Valve assignment (valve - potentiometer) error
Error	83	No continuous positive potential, check-back signal
Error	84	Relay outputs overloaded (total current)

7. SPECIAL FUNCTIONS

7.1 INTENSITY CONTROL OF THE LED DISPLAYS

The KR-450 air-conditioner controller features an intensity control which dims the display when the vehicle's headlights are on. The driver himself can set the intensity to any setting (dimmer).

The dimmer can be set in "DIAGNOSTIC MODE" with the ignition switched off:

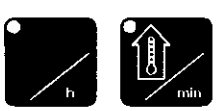
Press keys S6 and S9 simultaneously. After the program version and the contents of the error memory have been shown on the display,

you can call the intensity dimmer by pressing keys S1 and S2 simultaneously.

You will now see the following for instance on the display

=050

This display means intensity set to 50 %.

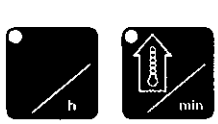


This value can be varied from 0 to 100 % with keys S12 and S13.

You can store this value with key S14 after setting the intensity.

You quit DIAGNOSTIC MODE again by pressing keys S6 / S9.

If you now drive with your headlights on, the display is dimmed to the set intensity value.
If you intend to drive with your headlights on under daylight conditions (e.g. in Sweden), you will not want the display dimmed.



You can switch the intensity dimmer on and off even when on the move by pressing both keys S1 and S2 simultaneously.

7.2 MAXIMUM/MINIMUM SETTING OF THE SETPOINT CONTROLS, PASSENGER COMPARTMENT TEMPERATURE

If the setpoint control for the relevant passenger compartment (upper deck or lower deck) is turned, in Automatic mode, beyond the perceptible detent position to maximum or minimum temperature, this means that you leave the automatic control range of the unit. In this case, the LED in the Automatic key blinks. The air-conditioner controller then fully opens all actuators for the heating system (motor valves and convector valves)in the red maximum position, and no regulation function is then performed.
This operating mode is used for bleeding the water circuit for instance. By contrast, when set to minimum setting (blue), the air-conditioning system is switched on continuously and no regulation function is performed (e.g. in order to fill the system).

7.3 DISPLAYING THE SET TEMPERATURE (SETPOINT)

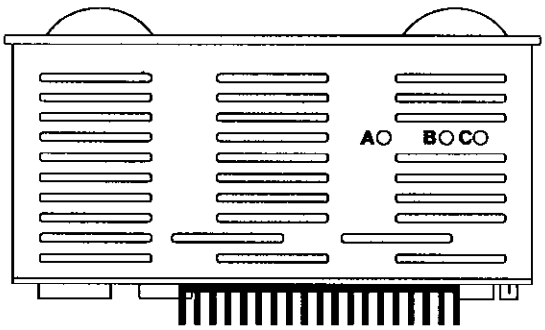
The KR-450 air-conditioner controller features a special function for displaying the setpoint of the setpoint controls with the LED display.

This special function must be activated by pressing the temperature keys S12, S13 and S14 simultaneously (with the ignition on!).

You will then see the set temperature for approx. 3 sec on the display when you operate the setpoint control (knurled wheel). A lower-case "o" indicates the upper deck temperature and a lower case "u" indicates the lower deck temperature at the first position on the LED display.

If you do not require the display function, you can deactivate it again by pressing the three keys again.

7.4 MINIMUM SPEED SETTING OF THE ROOF DUCT FANS



A: undervoltage (**do not modify!**)

C: minimum speed of the roof dust fan compartment

In order to set the minimum speed of the roof duct fan, you must withdraw the air-conditioner controller from its fixture adequately to permit you to gain access to the setting potentiometers from the front.

Then start the engine and switch on the roof duct fans with key S7 (ventilation, stage I).

You can now set the minimum speed of the roof duct fans using a small screwdriver to carefully turn the relevant setting potentiometer.

min max

- Turning counterclockwise - slows the fan down
- Turning clockwise - speeds the fan up

IMPORTANT! This setting can be made only with the engine running!

7.5 AUTOMATIC SPEED STABILISATION OF THE ROOF DUCT FANS

The KR-450 air-conditioner controller features an automatic stabilisation facility for the roof duct fans if the voltage of the vehicle's power supply system fluctuates. This ensures that the fans and, thus, the ventilation capacity are not influenced by abrupt rpm changes of the vehicle engine when moving from one set of traffic lights to the next since the voltage of the vehicle's electrical system drops when the engine is idling. A voltage compensation circuit in the air-conditioner controller boosts the speed of the roof duct fans if the voltage of the vehicle's electrical system drops in order to maintain a constant air flow rate (the control voltage is reduced). This control function is activated if the voltage of the vehicle's electrical system drops below 27.5 V, and it operates through to approx. 22.5 V.

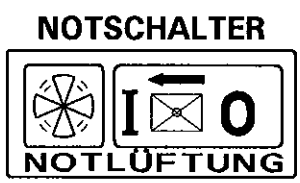
It is thus not advisable to correct the minimum speed with the engine switched off since the voltage of the vehicle's electrical system has a value of less than 24 V and the speed-boost function is already activated.

9. EMERGENCY VENTILATION AND RS-232 COMPUTER INTERFACE

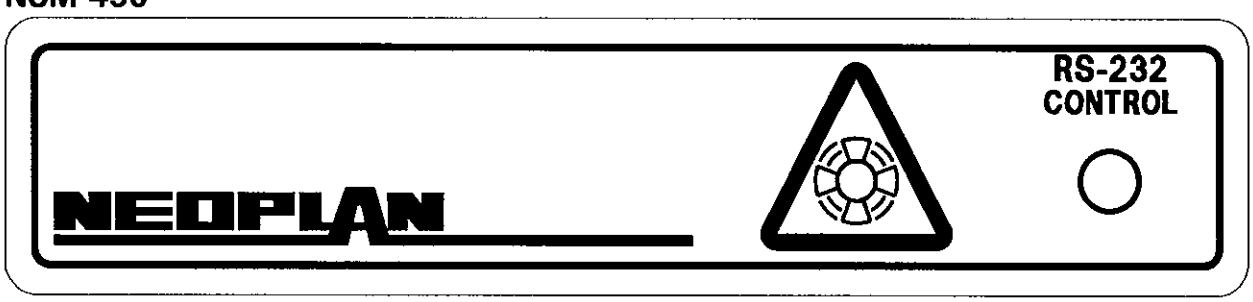
Whilst vehicles to date have been equipped with an emergency switch for the roof duct fans and a separate socket for the computer interface only if specifically requested by the customer, all vehicles have now been equipped with this since the introduction of the new dashboard owing to installation of the FRONT BOX CONTROL FBS-450 since both the emergency switch and the RS-232 interface are fitted in the FBS-450.

FUNCTION

If a total failure of the AIR-CONDITIONER CONTROLLER should occur, you can use a ball-point pen, pencil or other sharp implement to press the switch located in the triangle symbol. This switches off the air-conditioner controller and increases the speed of the roof duct fans to maximum speed with no regulation function. This function is indicated by a red LED in the emergency switch.
This function can be reset by pressing the switch again. The air-conditioner controller is switched back on and then runs through its test cycle (which takes approx. 3minutes).



NSM-450



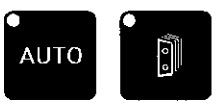
COMPUTER INTERFACE:

There is a socket for the test computer (e.g. laptop) at the right-hand side of the NSM-450 for test purposes.

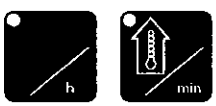
Only systems of Messrs. NEOPLAN or BADER GmbH may be connected!

10 SYSTEM SELF-TEST

The KR-450 air-conditioner controller features a special operating mode which can be used to check the individual control circuits and monitoring elements, and this is referred to below as the self-test. This operating mode is practical only with the ignition switched on.



The self-test is activated by simultaneously pressing keys AUTO and S11. You will then see "-01" on the display, i.e. test program 1.



You can select test programs 1 to 10 with keys S12 and S13.

You start the relevant test program by pressing key S14.

You can quit the self-test again by pressing key AUTO.

10.1 THE TEST PROGRAMS IN DETAIL

PROGRAM 1:

This test program tests the key lighting on the control section. The LEDs in the keys light one after the other. You will see "LED" on the display.

You can quit the test program by pressing key AUTO.

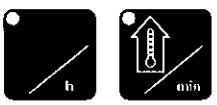
PROGRAM 2:

This test program is used to test the 7-segment display. All segments are activated at all four digits one after the other.

You can quit the test program again by pressing key AUTO.

PROGRAM 3:

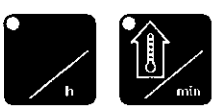
This program tests the keys on the control section. When you press a key, the related LED in the key lights providing the control section is operating correctly. You will also see the key number 1...14 on the display.



You can quit this test by pressing keys S12 and S13 simultaneously.

PROGRAM 4:

Program 4 tests the setpoint potentiometers on the control section.



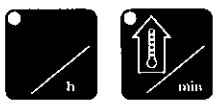
You can select the potentiometer with keys S12 and S13 The name of this potentiometer is displayed at the left on the display.

Potentiometer "F" corresponds to the driver's cockpit potentiometer. Potentiometer "o" corresponds to the upper deck potentiometer, potentiometer "u" corresponds to the lower deck potentiometer. You will see the potentiometer setting in percent at the right on the display. The range of the driver's cockpit potentiometer must extend from 0% at the MIN setting to approx. 90 % at the MAX setting. It must be possible to adjust the passenger compartment potentiometers from 25 % in the MIN setting to approx. 70 % in the MAX setting.

You quit the test program by pressing key AUTO.

PROGRAM 5:

This test program is used to test the valves.



You can select valves 1...6 with keys S12 and S13. The valve number is displayed at the left on the display, and the valve setting from 0 % to 100 % is displayed at the right.

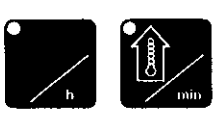
Assignment of the valves:

1: Roof valve, upper deck/convector, front, City
2: Roof valve, lower deck
3: Driver's cockpit valve
4: Front box, upper deck/convector, rear, City
5: Convector, lower deck
6: Convector, upper deck

You quit the test program by pressing key AUTO.

PROGRAM 6:

This displays the temperatures of all sensors.



You can select the sensors 1...11 with keys S12 and S13. The number of the sensor is displayed at the left on the display. The sensor temperature is displayed at the right.

Assignment of the sensors:

Sensor 1:	Outside temperature
Sensor 2:	Passenger compartment, lower deck
Sensor 3:	Duct, lower deck
Sensor 4:	Convector, lower deck/City, front
Sensor 5:	Passenger compartment, upper deck
Sensor 6:	Duct, upper deck
Sensor 7:	Convector, upper deck, front
Sensor 8:	Convector, upper deck, rear
Sensor 9:	Reserve
Sensor 10:	Reserve
Sensor 11:	City: Convector, rear / potentiometer Fbox UD SPACELINER

You quit the test program by pressing key AUTO.

PROGRAM 7:

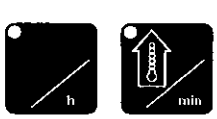
This test program tests the relay outputs. You will see an "r" at the left on the display. You can select the outputs 1...16 with keys S12 and S13. The number is displayed at the right on the display.
You quit the test program by pressing key AUTO.

Assignment of the relays:

Relay 1:	Front box, 40 %
Relay 2:	Front box, 100 %
Relay 3:	Convector, upper deck, front
Relay 4:	Convector, upper deck, rear
Relay 5:	Convector, lower deck
Relay 6:	Fan
Relay 7:	Air-conditioner connector
Relay 8:	Air-conditioning, 100 %
Relay 9:	Circulating air flap
Relay 10:	Auxiliary heating system
Relay 11:	Water pump
Relay 12:	Frost warning
Relay 13:	Reserve
Relay 14:	Reserve
Relay 15:	Valve, convector, upper deck, open
Relay 16:	Valve, convector, upper deck, closed

PROGRAM 8:

This program tests the valve outputs I/1...8. You will see "v1" at the left on the display.



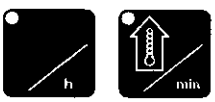
You can select the outputs 1...8 with keys S12 and S13. The number is displayed at the right on the display.
You quit the test program by pressing key AUTO.

Assignment of the outputs:

Output 1:	Circulating air, driver's cockpit, open
Output 2:	Circulating air, driver's cockpit, closed
Output 3:	Screen defrost, open
Output 4:	Screen defrost, closed
Output 5:	Driver/centre aisle, open
Output 6:	Driver/centre aisle, closed
Output 7:	Front box valve, driver's cockpit, closed
Output 8:	Front box valve, driver's cockpit, open

PROGRAM 9:

This test program is used to test the valve outputs I/1...8. You will see "v2" at the left on the display.



You can select the outputs 1..8 with keys S12 and S13. The number is displayed at the right on the display.

Assignment of the outputs:

Output 1: Roof valve, upper deck/City, convector, front, closed
Output 2: Roof valve, upper deck/City, convector, front, open
Output 3: Roof valve, lower deck, closed
Output 4: Roof valve, lower deck, open
Output 5: Valve, front box, upper deck, closed
Output 6: Valve, front box, upper deck, open
Output 7: Convector, lower deck/City, rear, closed
Output 8: Convector, lower deck/City, rear, open

You quit the test program by pressing key AUTO.

PROGRAM OA:

This tests the control voltage outputs. The number of the output 1/2 is displayed at the left-hand display position.

You can select output 1/2 with key S14. The output voltage between 0 % and 100 % is displayed at the right.

You can set the output voltage between 0 % and 100 % with keys S12 and S13.

An output voltage of 0 % corresponds to maximum speed and an output voltage of 100 % corresponds to minimum speed. The keys have a repeat function if you keep them pressed.

You quit the test program by pressing key AUTO.

NOTE:

X3

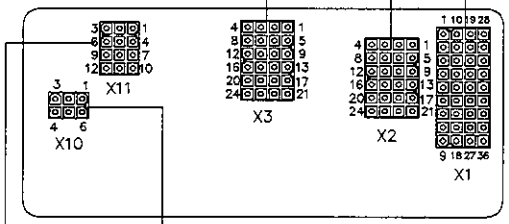
PIN	FUNCTION	COLOR	NO.
1	MOTOR VALVE ROOF LOWER D.		
2	MOTOR VALVE FRONTBOX LD		
3	MOT VALVE FRONT CONVECTOR		
4	MOT VALVE REAR CONVECTOR		
5	MOTOR VALVE ROOF LOWER D.		
6	MOTOR VALVE FRONTBOX LD		
7	MOT VALVE FRONT CONVECTOR		
8	MOT VALVE REAR CONVECTOR		
9	POT + MOTOR VALVE ROOF LD		
10	POT + MOTOR VALVE FBOX LD		
11	POT + MOT VAL FRONT CONV.		
12	POT + MOT VAL REAR CONV.		
13	POT SLIDE MOT VAL ROOF LD		
14	POT SLIDE MOT VAL FBOX LD		
15	POT SLIDE MOT VAL F. CONV.		
16	POT SLIDE MOT VAL R. CONV.		
17	POT GND MOT VALVE ROOF LD		
18	POT GND MOT VALVE FBOX LD		
19	POT GND MOT VAL F. CONV.		
20	POT GND MOT VAL R. CONV.		
21	MOTOR VALVE SHIELD ROOF LD		
22	MOTOR VALVE SHIELD FBOX LD		
23	MOT VAL SHIELD FRONT CONV.		
24	MOT VAL SHIELD REAR CONV.		

X4

PIN	FUNCTION	COLOR	NO.
1	OUTSIDE TEMPERATURE		
2	OUTSIDE TEMPERATURE		
3	SHIELD		
4	LOWER DECK COMPARTMENT		
5	LOWER DECK COMPARTMENT		
6	SHIELD		
7	ROOF CHANNEL LOWER DECK		
8	ROOF CHANNEL LOWER DECK		
9	SHIELD		
10	FRONT CONVECTOR		
11	FRONT CONVECTOR		
12	SHIELD		
13	REAR CONVECTOR		
14	REAR CONVECTOR		
15	SHIELD		
16	IDLE		
17	IDLE		
18	SHIELD		
19	IDLE		
20	IDLE		
21	SHIELD		
22	IDLE		
23	IDLE		
24	SHIELD		
25	IDLE		
26	IDLE		
27	SHIELD		
28	IDLE		
29	IDLE		
30	SHIELD		
31	IDLE		
32	IDLE		
33	SHIELD		
34	RS232 – RxD		
35	RS232 – TxD		
36	RS232 – GROUND		

X2

PIN	FUNCTION	COLOR	NO.
1	BLOWER RELEASE		
2	AIR COND. 100% (COUPLING)		
3	AIR COND. 50% (POWER MAGN)		
4	FRESH/CIRCULATING AIR FLAP		
5	CODER PIN		
6	+ TO ADD. HEATER (WEBASTO)		
7	ADDITIONAL WATER PUMP		
8	FROST WARNING OUTPUT		
9	AIR COND. SYSTEM OK RESP.		
10	WEBASTO O.K. RESPONSE		
11	BLOWER PHASE SHIELD		
12	LOWER DECK BLOWER PHASE		
13	FREE		
14	INPUT 1		
15	SPEEDOMETER CONTACT		
16	INPUT 2		
17	FREE		
18	FREE		
19	FREE		
20	FREE		
21	FREE		
22	FREE		
23	FREE		
24	FREE		

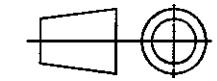


X11

PIN	FUNCTION	COLOR	NO.
1	FRESH/CIRC. AIR MOTOR FLAP		
2	WINDSCREEN DEFROST M. FLAP		
3	DRIVER/CENTER AISLE M. FLAP		
4	FRESH/CIRC. AIR MOTOR FLAP		
5	WINDSCREEN DEFROST M. FLAP		
6	DRIVER/CENTER AISLE M. FLAP		
7	FRONTBOX BLOWER STATE 1		
8	FRONTBOX BLOWER STATE 1		
9	FRONTBOX BLOWER STATE 1		
10	FRONTBOX BLOWER STATE 2		
11	FRONTBOX BLOWER STATE 2		
12	FRONTBOX BLOWER STATE 2		

X10

PIN	FUNCTION	COLOR	NO.
1	24V PIN BINDER 30 FUSE 20A		
2	24V BINDER 15 (IGNITION ON)		
3	BINDER 58 (NIGHT ILLUMINAT.)		
4	D+61 (ALTERNATOR)		
5	24V BINDER 15 FUSE 15A		
6	GROUND		



Alle Rechte vorbehalten nach DIN 34

Maßstab:

Werkstoff,Halbzeug

	Datum	Name
Bearb	07.09.93	Lentmaier
Gepr.		
Norm		

AIR CONDITION CONTROL KR-450

PIN OVERVIEW CITYLINER

BAIER INDUSTRIE-ELEKTRONIK

Zeichnungsnr: 0450.1.242

Dateinr: 04501240.dwg

Blatt 1

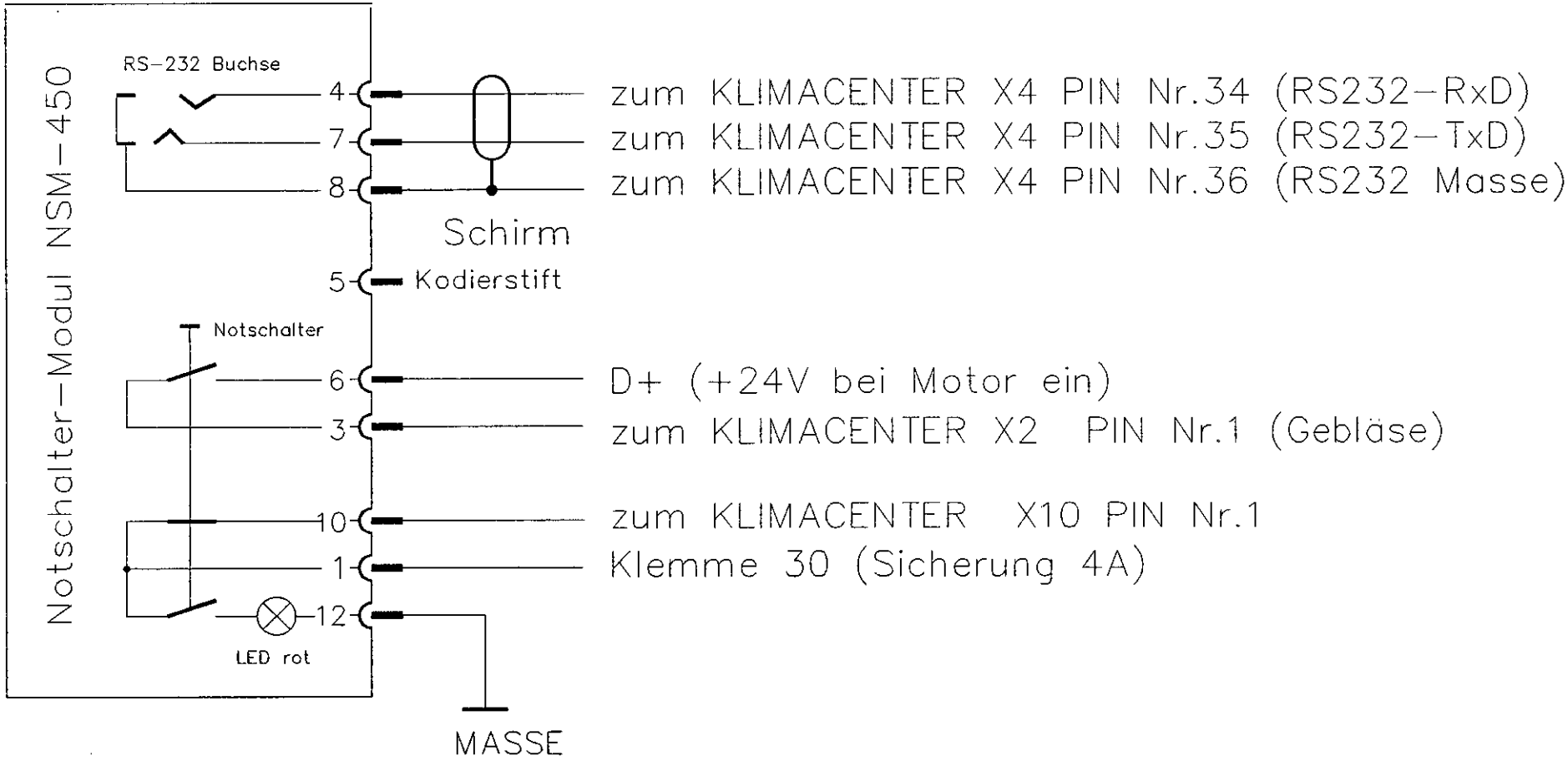
Zust	Änderung	Datum	Name

Ursp.

Ers.für:

Ers.durch

Anschlußstecker X-2



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7141 Großbottwar 2
Tel: 07148/8004
Fax: 07148/4996

Notschalter-Modul NSM-450	Z.-Nr: 0476.2.201	Toleranz:	Anderungen:	Name:	DAT:
Steckerbelegung X-2	Datum: 27.08.92	Maßstab: 1=1	Name: DAT:	Name:	DAT:
	Blatt-Nr: 1/1	Alle Rechte vorbehalten nach DIN 34	Name: DAT:	Name:	DAT:
	Name: G.Bader		Name: DAT:	Name:	DAT: